What Is Claimed Is:

1. A remote copy control method for remotely copying
a plurality of volumes formed in a plurality of disk subsystems,
5   the remote copy control method comprising the steps of:

obtaining an identifier of a first disk subsystem
of a first volume, the first volume being a copy source or a
copy destination of a volume pair as a remote copy target in
the disk subsystems, for a host computer connected to at least
10   one of the disk subsystems, based on a volume pair list for
registering an identifier of the first volume and an identifier
of the first disk subsystem of the first volume;

searching route information including the identifier
of the first disk subsystem based on a route list including
15   the route information for registering an identifier of a
plurality of second disk subsystems for relay as a command
transmitting route for the first disk subsystem and information
for determining an identifier of a third disk subsystem connected
to the host computer among the second disk subsystems, and
20   obtaining an identifier of the third disk subsystem expressed
by the searched route information; and

issuing, to the third disk subsystem corresponding
to the obtained identifier, a remote copy command of the first
volume including, in input information, the identifier of the
25   second disk subsystem and the identifier of the first disk

subsystem.

2. The remote copy control method according to Claim 1, further comprising the steps of:

receiving error information on the remote copy command from the third disk subsystem;

searching the route list and obtaining identifiers of a plurality of fourth disk subsystems for relay as the command transmitting route and an identifier of a fifth disk subsystem connected to the host computer among the fourth disk subsystems, the identifiers of the plurality of fourth disk subsystems for relay and the identifier of the fifth subsystem being expressed in route information different from the route information having the received error information; and

issuing, to the fifth disk subsystem, the remote copy command of the first volume including, in the input information, the identifier of the fourth disk subsystem and the identifier of the first disk subsystem.

3. The remote copy control method according to Claim 2, further comprising the steps of:

setting priority to the route information in the route list; and

degrading the priority set to the route information when the error information is received.

4.   The remote copy control method according to Claim 1, further comprising the steps of:

obtaining a host identifier for uniquely identifying

5   the host computer;

adding the host identifier to the route information; and

deleting, from the route list, the route information having the host identifier of the host computer that does not

10   match the host identifier added to the route information.

5.   The remote copy control method according to Claim 1, further comprising the steps of:

inquiring the main/sub property of the first volume

15   to the first disk subsystem;

obtaining a second volume as a pair of the first volume based on the volume pair list, when the main/sub property of the volume does not match the main/sub property required by a host command; and

20   issuing the remote copy command to the disk subsystem of the second volume.

6.   A command path control method of a disk controller comprising the steps of:

25   in the case of transmitting a command for volumes

formed to a plurality of disk controllers,

extracting identifiers of the different disk controllers from a volume pair list for registering an identifier of a first volume as a copy source or a copy destination in

5 a volume pair of a remote copy target in the disk controllers and an identifier of a first disk controller including the first volume, the identifier of the first volume and the identifier of the first disk controller being identified from an identifier of a host command for at least one host computer connected to

10 at least one of the plurality of disk controllers;

obtaining a second disk controller for directly receiving a command from the host computer among the extracted identifiers of the different disk controllers;

generating a disk controller path list comprising

15 a set of the identifiers of a pair of disk controllers, the pair having at least one of a first identifier and a second identifier of the disk controllers, which is different from those of another pair, serving as a volume pair included in the volume pair list;

20 obtaining a set of identifiers including the third identifier from the disk controller path list; and

generating a route list including route information including the identifier of the host computer, the identifier of the third disk controller, and the identifier of a fourth

25 disk controller different from the identifier of the third disk

controller in the set including the identifier of the third
disk controller.

7. The command path control method according to Claim
6, further comprising the steps of:

obtaining information for identifying whether or not
a remote copy command is received from a third disk controller
different from the second disk controller included in the set
including the disk controllers, via the disk controller
different from the third disk controllers; and

adding, to a route list, route information including
the identifier of the third disk controller only when reception
is possible.

8. The command path control method according to Claim
6, further comprising the steps of:

extracting an identifier of a fourth disk controller
in all the designated volume pair lists, from a first host
computer;

transmitting a list of the identifier of the fourth
disk controller to all of second host computers including the
first host computer;

issuing a remote copy command to all of the fourth
disk controllers and transmitting, to the second host computer,
the identifier of the successful second disk controller and

an identifier of the second host computer which issues the remote

copy command; and

generating a host path list including the transmitted

identifier of the second disk controller and the identifier

5   of the second host computer.

9.   The command path control method according to Claim

6, further comprising the steps of:

obtaining all identifiers of fourth disk controllers

10   for directly issuing a command from the host computers in a

host path list including one and/or a plurality of sets of a

host identifier for uniquely identifying the host computers

and the identifier of the fourth disk controller;

obtaining first logical path information on the fourth

15   disk controller;

extracting an identifier of a fifth disk controller

in the first logical path information;

generating route information including the

identifier of the fourth disk controller and the identifier

20   of the fifth disk controller;

obtaining second logical path information on the fifth

disk controller;

extracting the identifier of the first disk controller

included in the logical path information; and

25   adding, to the route information, the identifier of

the disk controller.

10. The remote copy control method according to Claim 1, further comprising the steps of:

5   generating a volume pair list which copies all of the identifier of the first volume as the copy destination of the volume pair in the designated volume pair list and the disk subsystems to which the first volume belongs; and

         fetching an identifier of a second volume as a pair

10 of the first volume and a sixth disk subsystem to which the second volume belongs.

11. The remote copy control method according to Claim 1, further comprising the steps of:

15   extracting all the volume pairs having at least one different identifier of adapters to which the first volume belongs, from the volume pair list for registering the identifier of the first volume as the copy source or copy destination of the remote copy target volume pair in the disk subsystem and

20 the identifier of the adapter, which are identified from the identifiers described in an operand of a host command for the host command connected to at least one of the disk subsystems; and

         issuing a command for forming a logical path between

25 the adapters in the extracted volume pair.

12. A method for transmitting a command for a volume in a disk controller, comprising the steps of:

extracting all volume pairs having at least one
5 different identifier of an adapter of a first volume as a copy source or a copy destination of a remote copy target volume pair in the disk controller, from a list of all designated volume pairs for registering one and/or a plurality of the identifiers of the first volume and the adapter; and

10 issuing a command for forming a logical path between two adapters included in the extracted volume pair.

13. A command transmitting method of s volume in a disk controller, comprising the steps of:

15 transmitting first route information including an identifier of a first disk controller for a second disk controller having a logical path to the first disk controller;

transmitting, to the first disk controller, second route information additionally having an identifier of the
20 second disk controller in the first route information, by the second disk controller which receives the first route information; and

adding the first and second route information to a route list in the first disk controller by the first disk
25 controller which receives the second route information.

14. A command control method of a volume in a disk subsystem, comprising the steps of:

obtaining an identifier of a first disk subsystem

5   of a first volume as a copy source or a copy destination of a volume pair as a remote copy target in the disk subsystem, by referring to a volume pair list for registering an identifier of the first volume;

obtaining an identifier of a second disk subsystem

10   connected to a host computer, from a host path list for registering the identifier of the second disk subsystem;

issuing, to the second disk subsystem, a remote copy command of the first volume including the identifier of the first disk subsystem as input information; and

15   when the identifier of the first disk subsystem does not match an identifier of a third disk subsystem which receives the remote copy command, obtaining route information including the identifier of the first disk subsystem from a route list for registering route information on an identifier of a fourth

20   disk subsystem which can transmit the remote copy command from the third disk subsystem and transmitting the remote copy command to the fourth disk subsystem indicated by the route information.

15. A command path control method of a disk controller,

25   comprising the steps of:

receiving a remote copy command with a transmittal function;

holding, from a first disk controller, route information indicating a route of an identifier of a second

5   disk controller which can transmit the remote copy command;

inquiring an identifier of the first disk controller with an identifier of a third disk controller including a volume as a transmittal destination of the remote copy command;

obtaining, from the route information, route

10   information including the identifier of the third disk controller including the volume as the transmittal destination of the remote copy command; and

transmitting the remote copy command to the second disk controller indicated by the route information.

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16.   A disk subsystem having a plurality of disk subsystems having volumes for storing data used for a host computer, for processing a command transmitted from the host computer and for remotely copying the volumes by connecting

20   the disk subsystems, the disk subsystem comprising:

a memory for storing a volume pair list and a route list, the volume pair list for holding an identifier of a first volume as a copy source or a copy destination of remote copy and an identifier of a first disk subsystem of the first volume,

25   and the route list for holding route information including

information for determining an identifier of the host computer,

the identifier of the first disk subsystem, an identifier of

a second disk subsystem for relay as a transmitting route of

the command to the first disk subsystem from the host computer,

5   or an identifier of a third disk subsystem connected to the

host computer among the second disk subsystems;

means for obtaining the identifier of the first disk

subsystem including the first volume by referring to the volume

pair list;

10   means for searching the route information including

the first disk subsystem by referring to the route list and

for obtaining the identifier of the third disk subsystem included

in the route information; and

means for requesting the remote copy of the first

15   volume in the first disk subsystem to the third disk subsystem

relating to the obtained identifier.

17.   The disk system according to Claim 16, wherein

the host computer has the memory and a processing unit, and

20   the memory further stores a program for realizing obtaining

of the identifiers and executes the program by the processing

unit so as to realize the obtaining means.

18.   The disk system according to Claim 16, wherein

25   the volume pair list is stored in the memory included in the

host computer, the route list is stored in at least the memory included in the first disk subsystem, and

the second disk subsystem for relay has means for receiving a command for requesting the remote copy and

5   transmitting the received command to the third disk subsystem.

19.   A remote copy control method for remotely copying a volume by connecting a plurality of disk subsystems having volumes for storing data used by a host computer, the remote

10   copy control method comprising the steps of:

loading, to a main memory, a volume pair list for registering an identifier of a first volume as a copy source or a copy destination of remote copy and an identifier of a first disk subsystem of the first volume;

15   loading, to the main memory, a route list for holding route information including information for determining an identifier of the host computer, the identifier of the first disk subsystem, an identifier of a second disk subsystem for relay as a transmitting route of a command to the first disk

20   subsystem from the host computer, and an identifier of a third disk subsystem connected to the host computer among the second disk subsystems;

obtaining the identifier of the first disk subsystem including the first volume by referring to the volume pair list;

25   searching route information including the first disk

subsystem by referring to the route list and obtaining the identifier of the third disk subsystem included in the route information; and

issuing a command for remotely copying the first
5   volume in the first disk subsystem to the third disk subsystem relating to the obtained identifier.

20. A remote copy command transmittal method for transmitting a command for remote copy of a volume by connecting
10   a plurality of disk controllers having volumes for storing data processed by a host computer, the remote copy command transmittal method comprising the steps of:

preparing, in a memory, a volume pair list including an identifier of a first volume as a copy source or a copy
15   destination of a volume pair as a remote copy target in the disk controllers and an identifier of a first disk controller including the first volume, which are identified based on an identifier of a host command to the host computer connected to at least one disk controller;
20   extracting identifiers of the different disk controllers from the volume pair list and obtaining an identifier of a second disk controller for directly issuing a command from the host computer among the extracted identifiers of the different disk controllers;
25   preparing, in the memory, a disk controller path list

comprising a set of the identifiers of a pair of disk controllers, the pair having at least one of a first identifier and a second identifier of the disk controllers, which is different from those of another pair, serving as a volume pair included in

5   the volume pair list;

obtaining a set of identifiers including the identifier of the second disk controller from the disk controller path list; and

preparing, in the memory, a route list including route

10   information including the identifier of the host computer, the identifier of the second disk controller, and an identifier of a third disk controller different from the identifier of the second disk controller included in the set including the identifier of the second disk controller;

15   searching route information including the first disk controller by referring to the route list and obtaining an identifier of a fourth disk controller as the copy destination included in the route information; and

transmitting a remote copy command of the first volume

20   in the first disk controller to the fourth disk controller relating to the obtained identifier.